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rections having been made in the text in the later (American) edition. The paper differs from that on which the corresponding Edinburgh edition is printed, being of excellent quality, and entirely free from foxing, the pages are larger, slightly trimmed, and the volume altogether a fine example of American book making.—WILLIAM C. BRAISLIN, M. D., *Brooklyn, N. Y.*

RECENT LITERATURE.

Loomis on the Tubinares.¹—As is generally known Mr. Loomis has been engaged in a study of the Tubinares for a good many years past. As early as 1895 there appeared the first of his series of papers on Californian water birds and following these he, as Director of the museum of the California Academy, organized an expedition to the Revilla Gigedo Islands which brought back a large collection of these pelagic birds to a study of which Mr. Loomis at once devoted himself. All of this material was destroyed in the disastrous conflagration of 1906, but the Academy's Galapagos Expedition under Mr. Rollo H. Beck, which returned in the same year, brought even richer material and upon this collection and other recent accessions, numbering upwards of two thousand specimens, Mr. Loomis's study is based. He has likewise visited the leading museums of the United States and studied their material while he has embodied the results of his own field studies and the manuscript notes of members of the two expeditions above referred to — Messrs. E. W. Gifford, Rollo H. Beck and Dr. A. S. Bunnell. Naturally his report constitutes a contribution of very great importance to our knowledge of these puzzling birds of the high seas and has been looked forward to with much interest by ornithologists.

The treatise has been prepared with much deliberation and in the scholarly style that has always characterized Mr. Loomis's writings while the author's thorough acquaintance with the literature of the subject is manifest on every page. It is divided into six parts: I. Historical; giving a brief sketch of the men and publications which have contributed to our knowledge of the group, including portraits of Coues, Salvin and Godman, after whom he has named the principal periods in the literature of the Tubinares; II. Geographic Distribution; III. Migration; IV. Variation; V. Classification and Nomenclature; VI. Results of the Study.

¹ A Review of the Albatrosses, Petrels, and Diving Petrels. Expedition of the California Academy of Sciences to the Galapagos Islands, 1905-1906. By Leverett Mills Loomis. Proc. Acad. Calif. Sci. Fourth Series, Vol. II, Pt. II, No. 12, pp. 1-187, pll. 1-17. April 22, 1918.

The last part comprises nearly two-thirds of the entire report and to the student of the *Tubinares* is the most important portion. It treats of the forty-four species obtained by the expedition and goes into great detail regarding variation in size and coloration, migration and habits. A vast and important addition is made to our knowledge of these birds but the evidence presented may very likely be interpreted differently by other students of the group, where it relates to the systematic arrangement of the forms.

In the section treating of classification and nomenclature Mr. Loomis considers all the known species, which he reduces to eighty-six in number, and gives his views upon these matters more concisely. His attitude as is well known is extremely conservative in regard to the recognition of species while subspecies he rejects entirely. To quote his own statement of his views: "Some ornithologists would differentiate all discernible geographic variation into subspecies; others would make selections and have 'practical subspecies.' Under the first method the separations become so fine that even typical examples can scarcely be determined. Under the second method the separations rest largely on the shifting sands of individual opinion. . . . In the present paper geographic variation is considered in connection with the other variations of species, the subspecies theory being discarded as a theory that has outlived its usefulness."

The flaw in Mr. Loomis's solution of this vexing question is that he presumes that "species" are things definitely established while as a matter of fact they are matters of personal opinion just as are "subspecies" and his action simply shifts the issue from determining which subspecies shall be recognized to deciding which forms are species and which are subspecies. When the custom of recognizing geographic forms by name, either binomially or trinomially, is practically universal, and when students will agree upon the majority of such forms quite as readily as they will upon the number of "species" that are to be recognized, it seems that the value of a work is impaired in which such an ultra-conservative attitude is maintained.

Mr. Loomis has always been an ardent student of bird migration and his numerous contributions to the subject are well known, so that one turns with especial interest to the chapter dealing with this fascinating problem in order to learn his present views. These we find rather disappointing inasmuch as he adheres closely to the old idea that "the young learn to migrate through the example of the adults," and "that the adults are guided by physical phenomena over areas that experience has rendered familiar." Dr. John B. Watson's well known experiments with Noddy and Sooty Terns are considered but the attempts to explain away the necessity for Dr. Watson's conclusion that the birds were able to find their way back to their nesting ground over waters hitherto unknown to them, are by no means convincing. As regards the "return" migration Mr. Loomis discounts the part that physiological incentive plays in starting the birds back to their summer homes with such astonishing regularity of

date, but he offers no adequate alternative reason. One point that he does emphasize however deserves careful consideration, i. e. that in judging whether the young or adult birds migrate first we are often basing our conclusions upon cases of arrested migration— young birds which have dropped out of the flight exhausted, and not upon the migratory flight itself. In the case of land birds however, the entire flight has to pause somewhere and we should at our stations of observation have just as good an opportunity of seeing one part of it as another.

These are big problems however, and are only incidentally connected with the main subject of Mr. Loomis's report which will take its place as one of the notable contributions to the natural history of a group of birds as baffling as they are fascinating. The key to their ultimate systematic arrangement will be found in the acquisition of adequate series of breeding birds from all of the scattered islets to which they resort to rear their young. Until we in a measure secure such material a reasonable conservatism in the description of new forms is perhaps the wisest course to pursue.

The half-tone plates, beside the portraits already referred to, consist of photographs of Albatrosses on the Galapagos Islands and of numerous skins illustrating variations in coloration of adults and young. There is a detailed map of the Galapagos Group and another of the oceans of the world.

A previous publication, No. VIII of this series, by Mr. E. W. Gifford, issued August 11, 1913, covered the other families of water birds and the doves obtained by the expedition. As we understand that Mr. Gifford is now engaged in other lines of work we fear that he may not contemplate completing his report on the remaining families contained in the collection. If not it is sincerely to be hoped that the authorities of the California Academy will arrange for their study by some one of the California ornithologists as material of such value to ornithology should be reported upon without further delay.— W. S.

Murphy on Atlantic Oceanites.¹— This is the second contribution by the same author from the Brewster-Sanford collection of sea birds in The American Museum of Natural History. Mr. Murphy's conclusions are based on a study of more than two hundred skins of the Wilson's Petrel in the collections in the American Museum (including those of Dr. Jonathan Dwight and Dr. L. C. Sanford), the Brooklyn Museum, and the Museum of Comparative Zoölogy. This wealth of material makes his conclusions correspondingly convincing. In the section on plumages and molts, it is shown that the juvenal plumage is recognizably different from that of the adult, and that the molt and growth of wing quills in the adult causes a seasonal variation in the wing measurement quite sufficient

¹ A Study of the Atlantic *Oceanites*. By Robert Cushman Murphy. Bull. Amer. Mus. Nat. Hist., Vol. XXXVIII, pp. 117-146, pll. I-III, March 26, 1918.